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MALIGNANCY

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Two recent studies of cancer mortality in the United States—one by Dr. Schereschewsky of the United States Public Health Service, of data for the general population of the Registration areas of the United States, and the other by the Metropolitan Life Insurance Company of 125,000 deaths from cancer which have occurred among a million industrial policyholders of the company between the years 1911 and 1925—have reached the same conclusion, that cancer as a cause of death is increasing. Both of these authorities claim that the increase cannot be explained on the score of improved diagnosis, or of changing age and race constitution of populations. However, Dr. Dublin of the Metropolitan Life concedes that the mortality rate from cancer is influenced by the fact that we are now confronted with a new situation because of the reduction in mortality from other conditions . . . ; “for with every improvement in the condition of life in the early ages, more and more people will approach the later period when the population is exposed to the cancer menace.”

Dr. H. Gideon Wells, of the University of Chicago, in a recent address, indicated his agreement with Dr. Dublin’s reasoning. Dr. Wells, in stating that cancer is a disease of all nations and not alone of civilization, showed that “the expectancy of life for males in India is about twenty-six and six tenth years as against fifty-four years in the United States,” and that, therefore, most males in India never reach the cancer age.

In a most scientific presentation of statistics relating to cancer mortality, Dr. Wells stated that "the increase in the cancer rate is just about the same as the increase in the other three common causes of death in those who have passed the prime of life—cerebral hemorrhage, nephritis, and heart disease." Increased duration of life probably is the most important of the reasons for the seeming increase in cancer mortality. When one is faced by rows and rows of figures apparently proving the tremendous increase in the cancer rate, one is bound to be impressed, but when scientific analysis of the figures is undertaken it is evident, in the words of our eminent colleague, that "statistics are like sausages; much depends upon the old woman who makes them." Dispassionate analysis of cancer mortality statistics makes it evident that cancer mortality has increased but little, if it has increased at all.

Before the recent Mohonk Conference on Cancer, Dr. Dublin said that "the efforts which have been made during the past ten years to deal with cancer are, in the light of the mortality figures, relatively puny," and he asks "What are intelligent laymen, physicians and surgeons going to do about the high cancer hazard which confronts the average citizen today?"

The present writer is not concerned essentially with the statistical evidence, pro and con, relative to the increase in cancer. He is interested to the nth degree in reducing the cancer mortality and in the best methods to effect this result. Whether or not cancer really has increased as is asserted in many quarters is a question which cannot be answered with any degree of accuracy. The lengthened span of life, better methods of diagnosis, more accurate certification of causes of death, etc., must all be taken into account when cancer mortality is being considered. The improved pathological analysis of the neoplasms and the recognition of the multiplex types of cancer (of which we shall speak again

when we discuss etiology) have their bearing on cancer mortality rates.

ETIOLOGY OF CANCER

In a paper on cancer, a brief review of the apparent etiology of the disease might be in order—but what definite things concerning the etiology do we know today? All of the theories advanced—constitutional, parasitic, or strictly cellular—are insufficient to account for the disease and we know but one definite thing—that cancer is a process of malignant cell proliferation, but the cause of the proliferation—this running amuck of the cells—is absolutely unknown. There are conjectures in plenty to account for the revolutionary reaction of cancer cells in the human body but there is no definite knowledge of what constitutes the process.

We have come to realize that both pathologically and clinically there are the greatest variations in the mass which we term “cancer.” Pathologically we are able apparently to divide the mass into its component parts and yet how can we account for the degrees of virulence often found in malignant growths which have the same cellular formation under the microscope? The varieties of clinical characteristics in neoplasms of like nature can rarely be attributed to differences in constitution, or the cancer patient’s environment. There are types of cancer so diversified—so far removed from one another clinically, that it is much easier to conceive of them as separate entities than as parts of a composite mass. The clinical and pathological differentiations which we find today in this mass which we term “cancer” would seem to point to the fact that it is of multiplex pathology. If all of the types of cancer which we are able to demonstrate are parts of the same disease, may there not be other potent factors, unknown to us, underlying the malignant process within the host? However, it is not always imperative that we know the etiology of a disease in order to work out

a cure (the Patagonian Indians, through experimentation, learned to use cinchona bark for the cure of malaria long before the parasite producing malaria had been isolated)—and the purpose of this paper is to summarize what we have to offer the cancer victim in the way of prevention, relief and cure!

CANCER PREVENTION

First, by way of prevention, some progress is being made, through educational campaigns in instructing the laity regarding cancer. There are two sides to the question of educating the general public in relation to malignancy. Of course, to institute "scare head" campaigns, to create a widespread terror and emotional stress—substituting fear for facts—is as disastrous as to keep the public ignorant of the early symptoms of cancer. There should be a well balanced middle ground. There are some essential facts of cancer prevention, relief and cure to which the public has an inherent right. For example, periodical examinations should be emphasized. People should be taught to recognize that irritation of practically any type may be conducive to cancer and that the development of any abnormal symptom, in the human body, requires the attention of a physician.

On the physician's side, expert diagnosis should be the only type forthcoming. The physician should be trained to recognize as far as is humanly possible, even the earliest and most indefinite symptoms of disease. He must foresee possible cancer in such conditions as cervical tears and uterine discharges; in chronic gastritis; in hemorrhoids; in irritations (gallbladder, kidney, etc.) from calculi. He must forestall possible cancer by removal and repair of such conditions; by care in the palpation of the gastric mass, or the breast tumor—thus preventing localized cancer cells from being disseminated by manipulation. He must be qualified to offer expert advice regarding the best methods of treatment for

the malignant condition—and in order to do this his facts must be unassailable. Many times the final decision regarding the type of treatment rests with the family physician—and his is the responsibility.

ELECTROTHERAPY

When we consider radium or x ray in the treatment of malignancy, even after the many years that these methods have been in use, it is not easy to make a definite statement. Opinions vary, and widely. However, we have come to realize that these methods have decided limitations and that the best results secured through them have been obtained in conjunction with, or as adjuncts of, surgery, in suitable cases. Surgical diathermy—or as it is more usually termed now, electro-coagulation—has been employed by the writer with some good results. Dr. Howard Kelly has had some success in the use of the Clarke method of coagulation, combined with Wyeth's cutting needle, in the treatment of epithelial or more or less superficial growths. Others have reported successes with other types of electrotherapy. The Percy cautery is a development of electrotherapeutics of which earlier forms were the cauterization of Byrne and the electrocoagulation of Doyen. Certain superficial growths may be made to disappear by the application of x ray, and permeation nodules, recurring after operation, may also vanish under irradiation, but in deep seated cancer the beneficial effect, when obtained at all, is temporary and palliative only, as indicated by the trend of current medical literature.

BIOOTHERAPY

In biotherapy, the results of using bacteria, micro-organisms, or sera are contradictory in the extreme and injections of the various metal colloids are still in the experimental stage—their utility still to be proved.

For many years to come the etiology of cancer

may remain in obscurity, and the pros and cons of electrotherapeutics and other treatments for malignancy may be matters of debate—but, as we have said, it is not always necessary to establish the cause of a disease in order to effect a cure. Today, there are, at least, two definite facts which we do know concerning cancer control—the first, that the elimination of all precancerous conditions is, in many cases, a preventive of future malignancy, and (2) that the early and adequate removal of a strictly localized cancer, with careful technic, safeguarding the host from dissemination of cancer cells, permits of a favorable prognosis, in the vast majority.

CANCER OF BREAST

Of course, there are differences of opinion, regarding the value of surgery in malignancy, even among the profession. So eminent a surgeon as J. B. Murphy, some years ago, at one of his clinics, made the statement, “that he had never seen a breast carcinoma in a woman between forty or forty-five, stout or fat, where the patient did not eventually die a cancer death.” Today, we know that there is little to confirm such a statement. One of the most comprehensive reports on cancer of the breast has been published recently by the Ministry of Health of Great Britain. The report covers an unusual number of cases and is broad in scope. The final conclusions on breast cancer are quoted herewith: “Cases of cancer treated only with internal medicines, or external applications are not being effectively treated. This does not mean that such agents as radium and x ray cannot be usefully employed as aids to surgery, or in cases where surgical operation is impossible. However, whatever may be the result of future investigations and whatever may be the case with cancer in other regions, early surgical operation affords the one chance for a patient suffering from cancer of the breast.”

“The extent of the breast operation has increased with our fuller knowledge of the natural course of the disease, so that anything but a wide operation involving skin and deep fascia, with complete removal of the breast, pectoral muscles and axillary contents is almost universally recognized to be relatively, if not entirely, useless. Recently, it has been possible to ascertain the results on a considerable number of cases suffering from undoubted cancer of the breast, confirmed by a microscopical examination, at varying intervals up to ten years after operation. They show that, with the modern complete operation, fifty-two percent are alive and well after a three-year period; thirty-nine percent after five years and thirty percent after ten years. These statistics relate to patients who were in various stages of the disease. When results were examined according to the stage of disease—before the disease had extended beyond the breast itself—ninety-four percent were alive and well at the end of three years, ninety-one percent at the end of five years and eighty-seven percent at the end of ten years. In the more advanced stages thirty-one to thirty-eight percent were alive at three years; fifteen to twenty percent at five years; and five to six percent at ten years.” These statistics of the British Ministry of Health agree with the statistics of the present writer whose surgical contact with some thousands of cases of breast tumors has proven the above figures to be a fair average of mortality for the various stages of disease indicated.

In a recent checkup of cases of carcinoma, in the writer's private files, it was established that in many cases, such as the one cited below, the patients were alive from seven to twenty years after the surgical removal of breast carcinomas. In all of these cases, the laboratory reports were rendered by two pathologists of recognized reputation.

E. M., female; sixty years of age; single. In 1909, the writer removed the right breast of the patient because of a well developed carcinoma; the

left breast had been removed some years earlier for the same cause.

In 1912, small nodules developed on the chest wall, near the scars of the breast operation. Several surgeons diagnosed these nodules, which were diffuse, painful and tender, as malignant recurrences. However, careful study of the symptoms indicated an acidosis; medical treatment was instituted, and the nodules disappeared.

The patient reports at intervals for observation, but since the removal of the breast in 1909 there has been no evidence of recurrence. After nineteen years, the patient is perfectly well.

Dr. William Crawford White, in a recent review of the Roosevelt Hospital (New York City) cases of breast carcinoma operated upon between the years 1912 and 1922, makes the following deductions. He says: "It is fair to believe that of all the operable cases, thirty to thirty-five percent are free from recurrence at the end of five years and if we take only the cases which are free from axillary metastases (at the time of operation) sixty to sixty-five percent are free from recurrence at the end of five years. Our ten year group of sixty-one cases indicates that twenty-four percent are free from recurrence at the end of ten years. Of the cases free from axillary metastases about fifty percent may expect to be free from recurrence." Certainly, these statistics are reassuring and go far to refute Dr. J. B. Murphy's pessimism in regard to surgical procedure for breast carcinoma.

CANCER OF TONGUE

Cancer of the tongue is another of our great surgical problems today. Dr. W. H. Schmidt quotes Warren, Butlin and Miller as listing the mortality from cancer of the tongue as from seventy-five to ninety percent and Schmidt adds "that the best surgical statistics do not claim more than thirty percent of cures for three years' duration and these, of

course, are the early operable cases representing only about forty percent of the total." With the high surgical mortality for cancer at this site, x ray and radium seemed for a time a real solution of the problem. But after a prolonged trial of radium in the treatment of carcinoma of the tongue and with the best facilities obtainable, the figures of the report of the Memorial Hospital, New York City, published 1924, are discouraging. Here there were treated 148 cases of carcinoma of the tongue of which 128 were primary and twenty recurrent. Of these, the report states, forty-three were clinically free from the disease for periods ranging from three months to over three years.

Inasmuch as we are yet to find an adequate substitute for surgery in cancer of the tongue, our most concentrated effort must be directed towards perfection of surgical technique in cancer at this site.

Some years ago, Cheatele demonstrated that the permeation theory of the spread of cancer may be applied to cancer of the tongue. For this reason, the writer makes it a practice in carcinoma of the tongue, as elsewhere, not only to take away all the glands, but the facial planes and all connective tissue around the vessels and muscles in juxtaposition to the cancer. The following case is reported rather fully as illustrative of my method in carcinoma at this site.

CASE I.—T. M., forty-nine years of age; married. In May, 1902, a small pimple appeared half way back, on the dorsum of the left half of the tongue. This lesion disappeared and reappeared several times. In December, 1903, the patient consulted me. By this time the man had lost considerable flesh and was somewhat cachectic. Radical operation was refused, and for nine weeks x rays were employed, but the patient grew worse steadily. In March, 1904, the first operation was performed, the submaxillary and sublingual glands on either side being removed. Salivary ducts were extirpated in the mouth. Some

cancerous glands were removed from the region of the tonsil on the left side to the dome of the pleura, and on the right side from the tonsil to the division of the carotid artery, and the lingual arteries on both sides tied. The mouth was then forced open, and part of the large cauliflower mass on the tongue cut down with Paquelin cautery.

Seventeen days later the second operation was performed; the left corner of the mouth was incised as far back as the masseter muscle, the tongue was drawn out and completely removed by an elliptical incision on the floor of the mouth, encircling the tongue in front on each side. A flap of mucous membrane and muscle from the right glossoepiglottic fold was used in making a bridge of tissue across the fauces in front of the epiglottis. The wound in the floor of the mouth was closed by chromicized catgut and covered with shellac; wound in cheek closed.

The patient recovered from the operation and, considering the extent of surgical procedure, there was little deformity. He was able to articulate clearly, and lived a useful life for ten years following operative procedure. He finally died of pneumonia.

Three other cases of equal interest, because of the length of time which has elapsed since operative procedure, are herewith briefly presented.

CASE II.—C. A., thirty-eight years of age, married. The patient came because of a growth on the upper lip. This steadily increased in size, in spite of many applications of nitric acid by the patient's physician. In March, 1912, I thoroughly excised the growth which involved about one third of the lip. The pathologist pronounced it epithelioma. On October 11, 1927, the patient reported that there had been no recurrence in the intervening years.

CASE III.—G. C., thirty-four years of age, married. This man developed a tumor the size of a hen's egg, which involved the left parotid and extended downward into the neck. In March, 1916,

the tumor was removed, with the gland below the angle of the jaw on the left side; the facial nerve, for some distance, was dissected free of all tissue. The patient recovered; there was no facial paralysis, and in February, 1928, he reported that in the twelve years since the operation there had been no recurrence.

CASE IV.—L. R., male, forty-one years of age. In January, 1907, this man consulted me for a nodule on the tip of his tongue. The nodule, together with a wedge shaped section of healthy tissue surrounding it, one inch long, with the apex towards the base of the tongue, was removed. Careful microscopic examination was made of the tongue nodule and sections of the healthy tissue. No cancer cells were found in the wedge shaped section of tissue except at the very apex. Here a nest of suspicious cells was found and, a day later, a longer angle was made by the removal of another small section at the apex of the wedge shaped incision. The nest of cells proved to be epithelioma.

Following this early removal, the patient was free from recurrence for over ten years. He was lost track of during the World War.

Mortality in surgical cancer of the tongue is, in many cases, relative to the thoroughness of the operative procedure.

In advanced carcinoma of the tongue, or where palliative measures only are possible, ligation of the external carotid artery and the branches on one side may be performed. In a week or two the other side may also be ligated. Retardation of the growth and relief of symptoms are sufficiently great to warrant employment of the method if there are no contraindications. In some advanced cases of malignant disease of the mouth, severing of the dental nerve gives great relief from pain. This can easily be done through the mouth, under local anesthesia. In operable cases, where the malignant growth is removable, but where the disease is sufficiently ad-

vanced to indicate probable early recurrence, ligation of both external carotids—but at two sittings—may be resorted to with the hope of lessening the likelihood of recurrence.

In some irremovable tumors of the base of the tongue, floor of the mouth, and pharyngeal wall, and other inoperable cancers of the region supplied by the external carotid and its branches, ligation may be indicated as a measure of last resort to save distressing death from hemorrhage.

CANCER OF UTERUS

Cancer of the uterus, which constitutes thirty percent of all cancer in women, is another of the serious problems of malignancy. The percentage incidence for cancer of the body of the uterus is variously estimated by different authors as less common than that of the cervix of from five to sixteen percent, although most of the statistics compiled do not differentiate between cancer at the two sites.

Treatment of cancer of the uterus by any of the methods in use today is a disheartening proposition. The mortality statistics, in relation to types of treatment, are as varied as are those of the tongue, or breast.

Regaud, Beuther and Horsdike state, for example, that radium treatment effects a cure in from fifteen to twenty percent of cancer of the cervix.

Polak, in a recent article on cancer of the cervix (1) summarizes thus: "We would say that in this country and in Europe, radium has replaced the radical operation in the treatment of all cases of cervical cancer, except possibly in incipient growths upon the portial surface. Even in these the high primary operative mortality more than balances the possible advantages of operation. In cancer of the body preoperative radiation followed by total hysterectomy with postoperative radiation is the accepted procedure." Dr. Polak adds "that his personal experience favors preoperative radiation a month or six weeks prior to extirpation."

Bonney performed the Wertheim-Reis operation for carcinoma in 214 of 340 unselected cases. Thirty-four of the 214 patients died from operation; eighty-two died from recurrence; five died from other diseases; eight were lost track of, and eighty-five were free from recurrence after five years.

Faure, of Paris, with thirty years of gynecological practice behind him, states "that he has had but one case of definite recovery (in uterine cancer) with radium." He says "that radium may furnish unpleasant surprises, such as recurrences after three, four, or five years." In regard to surgery Faure feels that cures of uterine cancer are more common and may even reach eighty or ninety percent with operative procedure when the uterus is still mobile.

In a collective review of the gynecological literature of 1926, the editors of the *American Journal of Obstetrics and Gynecology* (September, 1927) state their reactions, pro and con, to the statistical evidence offered concerning surgical or radiation treatment in cancer of the uterus, thus, "We are of the opinion that operation is more sound and is the method of choice to be employed in properly selected cases. In spite of the inspired statistics of radium therapy and the ambitions of the roentgenologists, the death rate remains without appreciable change."

The British Ministry of Health in its report on over ten thousand cases of carcinoma of the uterus, states "that in carcinoma of the body of the uterus the abdominal route (in surgery) is giving the best results, but that the vaginal route is not far behind and it is fully recognized in the literature from all sources that radiation does not give as good results at five years as abdominal hysterectomy."

Inasmuch as surgery is pretty generally conceded to be the means of choice in carcinoma of the uterus, perfected surgical technic seems to be the method to which we must look for reducing cancer mortality at this site. It seems probable, too, that many of

the "cures" attributed to radium in uterine carcinoma would have proved equally "cures" under expert surgical procedure, or under the cautery, or surgical diathermy, the two latter of which I have used in many of my operative cases. Of course, one must allow for a considerable variation in the operative results of different surgeons, since operative mortality naturally falls with technical skill. Early diagnosis, technical facility in thoroughly excising the growth and the probable channels of future recurrence and, in some cases, postoperative radiation are, at present, the essential points in the treatment of uterine carcinoma.

SURGICAL PROCEDURES IN CANCER OF PELVIC ORGANS

In the treatment of advanced carcinoma of the pelvic organs, I frequently use "starvation ligature and lymphatic block." The purposes of this method are to control hemorrhage, to check extension of the malignant growth, to mitigate pain, to diminish absorption of poisonous products and to permit the application of other surgical and nonsurgical measures. The technic of the operation for the average case is: laparotomy; ligation of the internal iliac arteries in two places, crushing the artery between; ligation of the ovarian arteries and (according to Beatson's theory) removal of the ovaries and para-ovaria, when possible; at times, the ligation of the obturator and, finally, of the sacramedia, if it is large enough to warrant it. Occlusion of the artery ligated is rendered certain by the crushing of the vessel between the two ligatures. This point is illustrated by the experience of a distinguished London colleague who, in a given case, tied off both ovarian and internal iliac arteries. The patient improved for a time, then had a severe hemorrhage and died. The surgeon had had several cases in which the procedure had been of distinct advantage, but this experience discouraged him. He held an autopsy in the case in question, and found each internal iliac encircled with

a ligature, but he also found that both internal iliacs were patent, one being slightly and the other completely so.

Either before or after this ligation, the glands along the iliacs are removed en masse, if possible, from the receptaculum chyli to the obturator foramen and the glands situated within and around the obturator foramen are removed. After the completion of the ligation and the removal of the lymph structures, if the patient's condition permits, all important accompanying nonmalignant pathological conditions are corrected as far as possible. After closure of the abdominal wall, with the arteries ligated, the uterus may be curetted to a shell, if it remains, without danger of hemorrhage. Later, roentgen rays or radium can be used, or the patient may be treated with Percy cautery, or other forms of heat.

Of course, it must not be inferred that arterial ligation with lymphatic block is advocated in all cases of advanced cancer of the pelvic organs, but the procedure is applicable to cases seemingly too far advanced for total extirpation with hope of permanent cure. In these cases there is the probability that life may be prolonged and suffering relieved. Moreover, in some cases it has been possible even to check the extension of the malignant process and effect a radical cure. Such a case is reported below.

CASE V.—C. S., female, forty-four years of age, married. This patient consulted me in 1910 for profuse leucorrhea tinged with blood. The discharge had been present three years, and two surgeons whom the patient consulted diagnosed the condition as irremovable cancer of the uterus. Examination revealed evidence of advanced cervical carcinoma with extension into the body of the uterus and apparent involvement of the broad ligaments and pelvic glands.

Operation was performed in November, 1910; hysterectomy and partial vaginectomy, preceded by

double arterial ligation of the internal iliacs, sacra media and ovarian arteries and removal of ovaries and tubes, and the glands along the ureters from the receptaculum chyli to the obturator foramen on both sides.

The pathological report was "carcinoma of cervix and body of the uterus: chronic fibrocystic ovaries and hyperplasia of the pelvic glands."

The patient had an uneventful recovery and in February, 1928, seventeen years after the operation, reported that she was in perfect health.

This case evidenced a radical cure even though the carcinoma had gone beyond the cervix into the body of the uterus. In cancer of the uterus, I feel, with Faure, that while the uterus is still mobile, a good percentage of cures may be hoped for where surgical procedure is thorough and adequate.

Whether the prognosis and the degree of surgical procedure to be undertaken should be grouped according to the extent of the disease, or according to its virulency, by some such test as Broders, is still an open question. A test to predetermine the degree of malignancy of the neoplasm would prove of incalculable aid to the surgeon in making a fairly accurate prognosis. Broders, in grading malignancy pathologically, says that the basis of the index depends on the fact that the more a cell tends to differentiate, or approach in structure a normal cell, the lower is the degree of malignancy. Cell differentiation plays the important part: if about three fourths of the epithelium is differentiated and one fourth undifferentiated, the tumor is of grade one, or of low malignancy; if the differentiated and undifferentiated epithelium are about equal, the tumor is grade two, etc.

Dr. E. Starr Judd (2) emphasized the importance of this test as applied to prognosis and made out a good case for the Broders' Index, based on case reports from the Mayo Clinic. It has always been my contention that cancer is of far more multiplex

pathology (of far more strictly defined variations) than our present classical pathological differentiations would seem to indicate, but whether the complex variations exhibited by tumors of the so-called same pathology are due to reactions within the neoplasm itself, or in a chemical or other reaction in the host, is merely a matter of surmise. If research can demonstrate a guide by which the degree of malignancy may be ascertained, with the probable chances of recurrence, the accuracy of surgical prognosis will have advanced decidedly.

In breast, tongue and uterine carcinoma, we have shown that evidence tends to prove surgery is superior to any other form of treatment in vogue today. What is true of cancer at these three sites is equally true of carcinoma in any other accessible part of the human body. With our present knowledge, cancer mortality can be controlled in but two ways—by early diagnosis and adequate surgery.

SUMMARY

Briefly reviewed, the classical principles of surgical technic as applied to cancer are few, but each principle should stand out clear cut and fully recognized by the surgeon who undertakes to operate upon a patient with carcinoma.

Autoinfection must be obviated and, therefore, no malignant tissue should be cut into unless the patient is safeguarded by the use of the cautery knife, or other form of heat, or chemical agents.

There must be clean cut incisions, with as little scar tissue as possible. Manipulation of malignant tissue must in every case be avoided as far as possible. Local recurrence and metastasis may be fostered by forcing the cancer cells into healthy tissue, or severed lymph glands. Lymph glands in the diseased area should be removed en masse before the primary tumor is excised and should be excised towards the tumor. In a large majority of cases of advanced cancer, operation can be only for the pur-

poses of palliation of symptoms and the prolongation of life. Such operative procedure in selected cases is applicable to every part of the body.

Neurectomy, cutting the nerves which directly supply the area of malignancy, will often control or eliminate pain.

In brain tumor, with vomiting, headache and choked disc, symptoms of pressure may be relieved by removing a portion of the skull, with a corresponding area of dura, and closing the soft parts over the defect.

Lymphangioplasty, in some cases of cancer of the breast, with brawny arm, supplies artificial lymphatic channels in the subcutaneous tissues of the arm by the passage of long strands of silk from the wrist to the healthy tissues beyond the axilla. Active infection and ulceration are two contraindications to this procedure.

In carcinomatous abdominal dropsy the withdrawal of ascitic fluid by tapping and in cancer of the chest the withdrawal of pleuritic fluid often afford much relief.

Gastrostomy; gastroenterostomy; colostomy; "short circuit," and colectomy may be all palliative measures, directed chiefly towards the relief of obstruction caused by irremovable cancer, and are applicable to various sites of the alimentary tract. Esophagostomy is resorted to in advanced cancer of the mouth, tongue or pharynx; gastrostomy for relief of obstruction of the esophagus or cardiac end of the stomach. Here too the introduction of the Simon-Souttar tube may prove of the great relief in cases of carcinomatous obstruction.

Starvation ligature and lymphatic block (as described in the case quoted above) is a surgical procedure for the relief of advanced cancer of the pelvic organs.

Cystostomy; nephrotomy and ureteral transplantation are procedures which may be applied to the urinary system. In the biliary system, cholecystos-

tomy, or cholecystenterostomy are methods applicable in some cases of extreme jaundice.

Finally, there are numerous therapeutic measures used today in the treatment of cancer, but many of the results of these are vague and inconclusive. X ray, without doubt, has a marked analgesic effect. Certain superficial growths, such as squamous carcinoma, may disappear under radiation. Permeation nodules, recurring after operation, may also disappear under x ray treatment. Radium is useful in the treatment of superficial lesions and in many of the benign conditions—keloids, angiomas, small fibroids, etc. Some claim it is used successfully as a surgical adjunct in blocking off extension in mammary carcinoma. For early cancer of the cervix and in some growths of the bladder radium has its advocates.

Epithelial or other more or less superficial growths, particularly about the face where, following operative procedure, a great deal of plastic work would prove necessary, may in some cases be eliminated by radiotherapy, with little or no disfigurement. However, I am convinced, both by the evidence of presentday literature and by personal experience that, while other methods of treatment may offer, in selected cases, possibilities of cure, or may play useful parts as adjuncts—in deep seated cancer, surgery, early and adequate surgery, is the surest means known today of reducing the cancer mortality.

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